



# The Impact of Innovative Technologies on Entrepreneurship and Employability

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**Résumé:** This study investigates the profound impact of innovative technologies, particularly in business analytics, on entrepreneurship and employability. Through a blend of qualitative case studies and quantitative assessments, the research explores how technology adoption shapes entrepreneurial practices and influences the evolving job market. Findings affirm that innovative technologies positively impact employability, creating new job opportunities and driving demand for specialized skills in data analysis and artificial intelligence. Moreover, these technologies serve as catalysts for entrepreneurship, fostering innovation and providing a competitive edge to ventures. Entrepreneurship, in turn, enhances employability by cultivating essential skills and providing practical insights and networking opportunities. The study underscores the critical importance of embracing technological innovation and entrepreneurial thinking to thrive in the digital age, offering valuable insights for entrepreneurs, policymakers, educators, and stakeholders navigating the dynamic business landscape.

**Mots-clés:** Innovative technologies , Business analytics , Entrepreneurship , Employability , Technology adoption , Digital age , Data-driven decision-making , Artificial intelligence , Job market , Skill acquisition , Technological innovation , Competitive advantage , Entrepreneurial success

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## 1. Introduction

In the contemporary landscape of business and employment, the rapid advancement of technology stands as a defining force, reshaping traditional paradigms and catalyzing unprecedented opportunities. At the forefront of this technological revolution lies the realm of business analytics, a discipline harnessing the power of data-driven insights and artificial intelligence to drive informed decision-making and innovation. This transformation is not only altering the fabric of entrepreneurship but also fundamentally redefining the skills and competencies demanded in the evolving job market.

The nexus between innovative technologies, entrepreneurship, and employability represents a critical area of inquiry in today's academic and professional discourse. As businesses navigate an increasingly complex and interconnected global economy, the ability to leverage advanced analytics has emerged as a decisive factor in achieving sustainable growth and competitive advantage.



Concurrently, individuals seeking to navigate the dynamic landscape of employment are confronted with a pressing need to acquire and adapt to new skill sets that align with the demands of an increasingly digitalized economy.

Against this backdrop, this research endeavors to explore the multifaceted impact of innovative technologies, particularly in the realm of business analytics, on both entrepreneurship and employability. By delving into the transformative potential of data-driven decision-making processes and artificial intelligence, this study seeks to elucidate the mechanisms through which technology shapes entrepreneurial practices and influences the readiness of the workforce.

Through a comprehensive analysis encompassing quantitative assessments, this research aims to uncover the intricate interplay between technology adoption, entrepreneurial success, and the evolving landscape of professional skills. By identifying key insights and practical implications, this study aspires to offer valuable contributions to entrepreneurs, policymakers, educators, and stakeholders within the broader business ecosystem.

In alignment with the overarching theme of "Entrepreneurship and Business Analytics," this investigation represents a concerted effort to bridge the gap between technological innovation and its practical applications, shedding light on the transformative potential of advanced analytics in driving entrepreneurial endeavors and shaping the future of workforce development. As we embark on this scholarly exploration, let us embark on a journey to unravel the profound implications of technology on the entrepreneurial landscape and the skills essential for thriving in the digital age.

## 2. Literature review :

The rapid evolution of information and communication technologies has profoundly transformed the entrepreneurial landscape and the job market, sparking growing interest in understanding the implications of these advancements on business practices and professional skills. The following literature review explores existing research on the impact of innovative technologies, particularly in the field of business analytics, on entrepreneurship and employability.

- **Innovative Technologies and Employability:**

Innovative technologies have reshaped the landscape of employability, creating both opportunities and challenges for individuals in the workforce. As highlighted by Autor et al. (2003) and Acemoglu and Autor (2011), technological advancements often lead to the displacement of traditional jobs while simultaneously fostering the creation of new employment avenues. Therefore, individuals must cultivate adaptive skills and embrace lifelong learning to remain employable in an ever-changing technological environment.

Moreover, the integration of innovative technologies into various industries demands a diverse skill set, including digital literacy, problem-solving abilities, and proficiency in utilizing emerging technologies. As traditional job roles evolve, the demand for specialized skills such as data analysis, artificial intelligence, and automation continues to escalate (Brynjolfsson et al., 2018; World Economic Forum, 2020). Thus, individuals must continuously upskill to meet the demands of the digital economy and enhance their employability prospects.

- **Innovative Technologies and Entrepreneurship:**

The nexus between innovative technologies and entrepreneurship is characterized by mutual reinforcement, with technological advancements often serving as catalysts for entrepreneurial ventures. Shane & Venkataraman (2000) highlight how emerging technologies create market gaps and inefficiencies that entrepreneurs can exploit to create



innovative solutions. Additionally, Audretsch and Keilbach (2004) emphasize that innovation not only drives economic growth but also stimulates the formation of new businesses.

Entrepreneurs leveraging innovative technologies gain a competitive edge by harnessing dynamic capabilities to adapt to technological changes and capitalize on emerging opportunities (Teece, 2010). In today's fast-paced business environment, the ability to innovate and integrate cutting-edge technologies is essential for entrepreneurial success.

- **Entrepreneurship and Employability:**

Entrepreneurship plays a pivotal role in enhancing employability by fostering the development of essential skills and competencies. Entrepreneurial endeavors cultivate traits such as creativity, resilience, and adaptability, which are highly valued in the contemporary job market. Moreover, entrepreneurs often acquire a diverse skill set through their ventures, ranging from leadership and decision-making to problem-solving and resource management.

Furthermore, entrepreneurial experiences can significantly enhance individuals' employability by providing them with practical insights, industry knowledge, and networking opportunities. As individuals transition between entrepreneurship and traditional employment, they bring valuable entrepreneurial skills and perspectives to their roles, contributing to organizational innovation and growth.

In conclusion, the interplay between innovative technologies, entrepreneurship, and employability underscores the dynamic nature of the modern workforce. Innovative technologies not only influence employability by shaping the demand for skills but also fuel entrepreneurial endeavors by creating new market opportunities. Entrepreneurship, in turn, enhances employability by nurturing essential skills and fostering a mindset of innovation and adaptability. As individuals navigate the evolving landscape of work, embracing technological innovation and entrepreneurial thinking is paramount to achieving sustainable employability and driving economic growth in the digital age.

### 3. Research Model and Hypotheses :

**H1:** *Innovative Technologies has a positive influence on Employability*

Supported by:

Autor and Acemoglu highlighted how technological advancements often lead to the creation of new job opportunities while rendering some traditional roles obsolete, necessitating the acquisition of adaptive skills to remain employable.

Brynjolfsson and the World Economic Forum noted that the integration of innovative technologies demands a diverse skill set, stimulating the demand for specialized skills and fostering employability.

**H2:** *Innovative Technologies positively affects Entrepreneurship.*

Supported by:

Shane & Venkataraman emphasized how emerging technologies can create entrepreneurial opportunities by filling market gaps, while Audretsch and Keilbach highlighted the role of innovation in spawning new ventures.

Teece pointed out that entrepreneurs leveraging innovative technologies can gain a competitive edge by adapting to technological changes and seizing emerging opportunities, crucial for entrepreneurial success.



**H3: Entrepreneurship positively influences Employability**

Supported by:

Entrepreneurship, according to various authors not explicitly mentioned, plays a crucial role in developing skills such as creativity, resilience, and adaptability, highly valued in the job market.

Entrepreneurial experiences provide practical insights, industry knowledge, and networking opportunities that significantly enhance individuals' employability, beneficial when transitioning between entrepreneurship and traditional employment, thus contributing to innovation and organizational growth.

**4. Research Methodology Data :**

This study employed both direct and online surveys to reach the target respondents. A total of 10 valid questionnaires were distributed directly to participating businesses, while 50 questionnaires were sent online to the email addresses of respondents who agreed to take part. The final sample size for the study was 60 observations. The observed variables were evaluated using a 5-point Likert scale ranging from 1 (completely disagree) to 5 (completely agree). The data collected originated from Moroccan cities known for their entrepreneurial dynamism and interest in innovative technologies, including Casablanca, Kenitra, Fez, and Tangier. Respondents: The study surveyed entrepreneurs, business founders, or senior executives of companies.

Sampling Criteria: Companies participating in this study had to meet the following criteria:

- 1) operating for less than 10 years, 2) demonstrating significant use of innovative technologies in their business operations, and 3) showing interest in business analytics and related technologies.

**4.1 Scales**

The scales used in the model were initially developed by previous researchers and have been adapted to suit the specific research context. Table 1 presents seven constructs along with 25 observed variables that have been utilized in the study. These items have been adjusted to align with the objectives and requirements of the current research.

**Table 1. Scale and origin of the scale**

Constructs	Number of observations	Source
Technological Innovation	3	[5]
Entrepreneurship		
1. New Capabilities	3	[5]
2. New Products	3	[5, 59]
3. New Market	3	[5, 60]
4. Accelerated Technological Progress	4	[5, 61]
5. Job Creation	4	[5, 61]
Employability	5	[62]

**4.2 Data Analysis Methods**

The research utilized the Smart-PLS software version 4 for data analysis. The collected data was evaluated based on the following criteria :



- Measurement model evaluation: Cronbach's alpha > 0.6; Composite reliability > 0.7, and AVE > 0.5. Discriminant validity: The square root of AVE should be greater than the correlation coefficient.
- Structural model evaluation: Coefficient of determination: Weak prediction: R2 = 0.02; Weak to moderate prediction: R2 = 0.02 - 0.16; Moderate prediction: R2 = 0.16 - 0.26; Strong prediction: R2 > 0.26.
- Q2: Blindfolding was used in the study: Weak prediction: Q2 < 0.02; Moderate prediction: Q2 = 0.02 - 0.35; Strong prediction: Q2 > 0.35.
- Effect size: Weak effect: f2 = 0.02; Moderate effect: f2 = 0.15; Strong effect: f2 = 0.35.

## 5. Results :

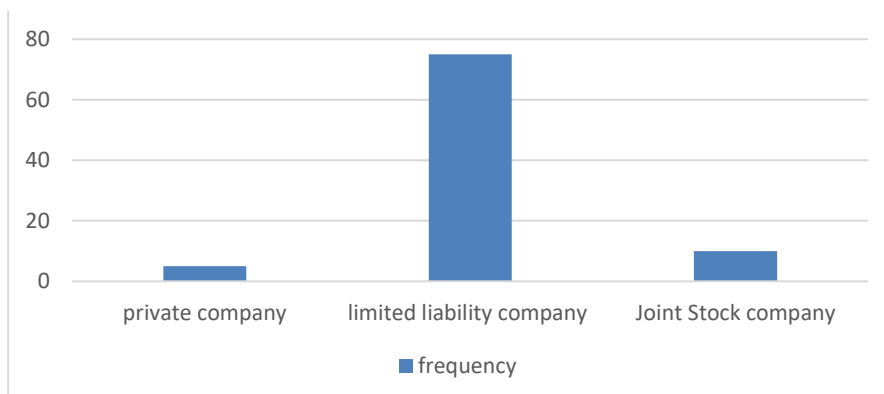
### 5.1 Sample Characteristics

The Table 2 offers a detailed analysis based on the type of operation, such as private enterprise, limited company, and joint stock company. Additionally, the table provides insights into the field of operation and labor size of the start-ups.

**Table 2. Sample characteristics**

	Characteristics	Frequency	%
Business type	Private company	5	8.3
	Limited liability company	45	75
	Joint Stock company	10	16.7
Business sector	Service	10	16.7
	Commerce	15	25
	Production	35	58.3
Size labour	< 10	25	41.7
	10-30	20	33.3
	30-50	5	8.3
	> 50	10	16.7

Regarding business type, the dataset shows that private companies represent a relatively small proportion, with only 8.3% (5) of the businesses falling into this category. Most businesses are limited liability companies, accounting for 75% (45). Joint Stock Companies comprise a significant but smaller portion, representing 16.7% of the businesses (10) (see Figure 3).



**Figure 3. Distribution of business types**

The proportion of companies operating in the service sector is 10 (16.7%), in the commercial sector is 15 (25%), and finally, in the manufacturing industry is 35 (58.3%), (see Figure 4)

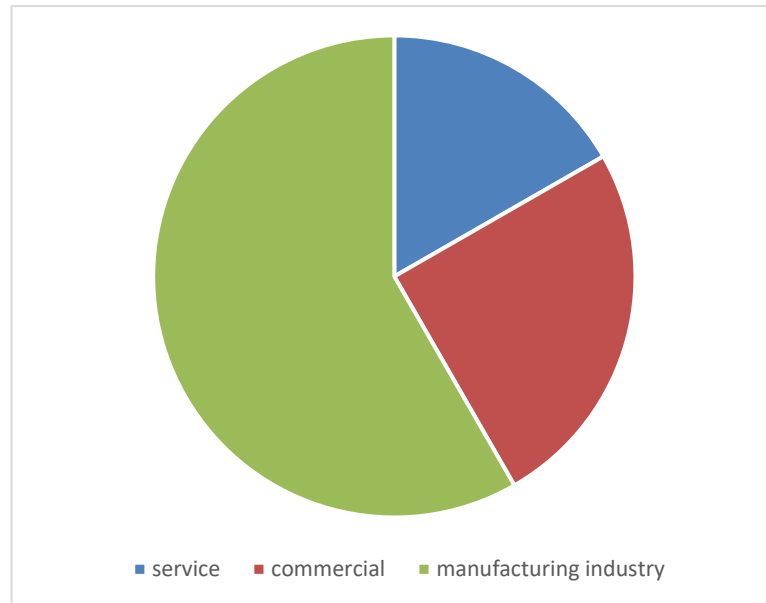


Figure 4. Percentage of business sector

Regarding labor size, the dataset provides information on the number of employees within each business category. Most businesses have less than 10 employees, constituting 72%. Businesses with 10-30 employees make up 19%, indicating a moderate-sized labor force. A smaller percentage of businesses have 30-50 employees (3%), while those with more than 50 employees represent 7% of the total (Figure 5).

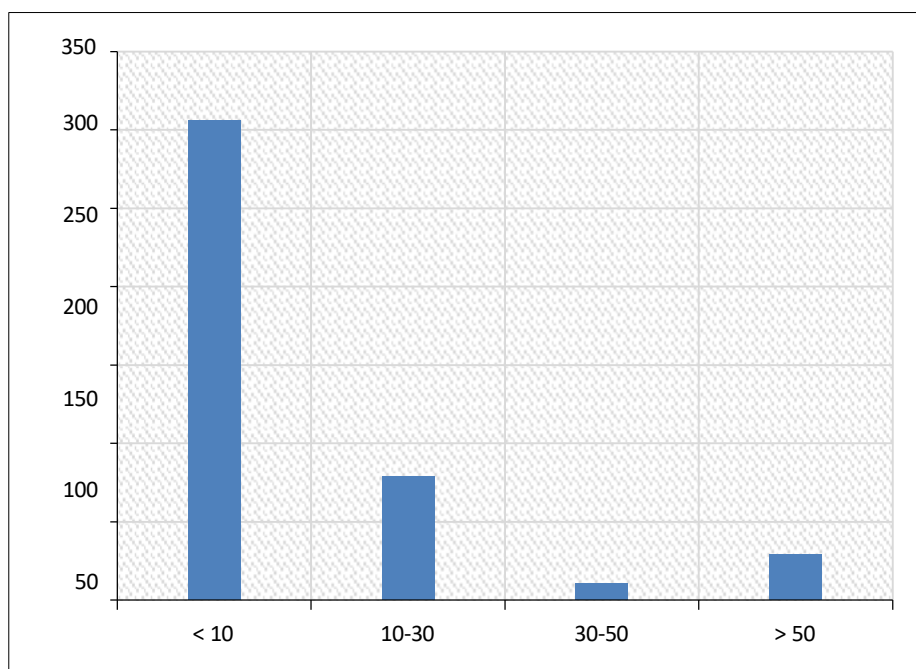


Figure5 : Distribution of labor size

## 5.2 Scale of Evaluation



Table 3 shows the mean, standard deviation, and loading coefficient of the observed variables used to measure the research concepts and the reliability and variance extracted from the model's scales.

The results show that the Cronbach's alpha coefficients and Composite Reliability of all scales are more significant than 0.6: Technological innovation (TEC): CA = 0.826; CR = 0.830; New Capability (CAP): CA = 0.839; CR = 0.841; New product/service (PRO): CA = 0.825; CR = 0.826; New Market (MARK): CA = 0.803; CR = 0.805; New revenue model (REV): CA = 0.878; CR = 0.879; New cost structure (COST): CA = 0.850; CR = 0.851; Start-up performance (PERF): CA = 0.869; CR = 0.872). According to the evaluation criteria of Hair et al. [63], all scales ensure reliability.

The results indicate that the loading coefficients of all observed variables are more significant than 0.7, except for the observed variable cost4, "We regularly utilize opportunities which arise through price differentiation" which has a low loading coefficient of 0.307 and therefore is excluded. The Average Variance Extracted (AVE) values of all scales are more significant than 0.5 (AVETEC = 0.613; AVECAP = 0.757; AVEPRO = 0.741; AVEMARK = 0.718; AVEREV =

0.732; AVECOST = 0.770; AVEPERF = 0.656), indicating that the scales ensure convergent validity

**Table 3. Statistical indicators of items**

Items	M	SD	λ	T
Technological innovation (TEC): Cronbach's Alpha (CA) = 0.826; Composite Reliability (CR) = 0.830; Average of variance extracted (AVE) = 0.613				
1. We keep the technical resources of our company up to date	2.63	0.98	0.78	23.85
2. Relative to our competitors our technical equipment is very innovative	2.68	1.02	0.82	24.60
3. We regularly utilize new technical opportunities in order to extend our product and service portfolio	2.86	1.12	0.74	18.51
New Capability (CAP): CA = 0.839; CR = 0.841; AVE = 0.757				
4. Our employees constantly receive training in order to develop new competences.	2.92	0.94	0.75	16.30
5. Relative to our direct competitors, our employees have very up-to-date knowledge and capabilities.	2.95	0.96	0.78	16.54
6. We constantly reflect on which new competencies need to be established in order to adapt to changing market requirements.	3.00	1.06	0.86	18.46
New Products: CA = 0.825; CR = 0.826; AVE = 0.741				
7. We regularly address new, unmet customer needs.	2.48	0.89	0.87	22.57
8. Our products or services are very innovative in relation to our competitors.	2.52	0.93	0.70	15.72
9. Our products or services regularly solve customer needs, which were not solved by competitors.	2.57	1.00	0.77	18.38
New Market (MARK): CA = 0.803; CR = 0.805; AVE = 0.718				
10. We regularly take opportunities that arise in new or growing markets.	2.70	0.79	0.75	13.23
11. We regularly address new, unserved market segments.	2.60	0.89	0.72	12.97
12. We are constantly seeking new customer segments and markets for our products and services.	2.87	1.02	0.81	15.28



Accelerated Technological: CA = 0.878; CR= 0.879; AVE = 0.732				
13. Our rapid adoption of cutting-edge technology has opened new business avenues	2.73	0.90	0.71	15.70
14. Aligning our strategy with technological trends has strengthened our market position and boosted revenue	2.75	0.96	0.76	18.34
15. Strategic technology use has spurred our revenue growth	2.68	1.05	0.86	19.36
16. Digital transformation has revolutionized how we generate revenue, fostering innovation and growth.	2.78	1.03	0.86	19.26
Job Creation : CA = 0.850; CR= 0.851; AVE = 0.770				
17. Job creation is at the forefront of our mission, guiding our strategic decisions and investments	2.84	0.97	0.81	23.44
18. We view job creation as a vital component of sustainable development, driving our efforts to expand and innovate.	2.88	1.01	0.77	24.35
19. We collaborate with stakeholders to identify avenues for job creation, ensuring our initiatives align with evolving economic needs	2.85	1.06	0.84	23.91
Employability : CA = 0.869; CR= 0.872; AVE = 0.656				
20. I have exhibited leadership in professional situations.	3.44	1.03	0.75	28.436
21. I have built a strong professional network in my field of expertise.	3.46	1.14	0.83	40.540
22. I have demonstrated initiative and autonomy in my work.	3.52	1.06	0.76	28.392
23. I have acquired and developed key skills sought after by employers.	3.53	1.18	0.77	34.200
24. I have strengthened my communication and teamwork skills.	3.40	1.10	0.76	20.784

Note: M: Mean; SD: Standard deviation;  $\lambda$ : Loading factor.

### 5.3 Hypothesis Testing

Table 8 present the results indicating the direct effects of technological innovation on Entrepreneurship and Employability. Specifically, technological innovation has a significant and direct impact on Employability, supporting hypothesis H1 ( $\beta$  Innovative Technologies  $\rightarrow$  Employability = 0.203;  $p < 0.01$ ). Similarly, technological innovation has a significant and direct impact on Entrepreneurship, supporting hypothesis H2 ( $\beta$  Innovative Technologies  $\rightarrow$  Entrepreneurship = 0.541,  $p < 0.01$ ). The table also provides information about the direct effects of Entrepreneurship on employability. The research results show that hypothesis H3 is accepted ( $\beta$  Entrepreneurship  $\rightarrow$  Employability = 0.673;  $p < 0.01$ ).

Furthermore, the results indicate the indirect impact of technological innovation on Entrepreneurship through Employability, which is statistically significant ( $\beta = 0.364$ ,  $p = 0.000 < 0.01$ ). The confidence interval [0.305; 0.412] does not contain the value of 0 and includes the estimated coefficient. These findings suggest that Innovative Technologies plays a partial mediating role between entrepreneurship and employability.

**Table 8. PLS-SEM result**

Path coefficients	B	Standard deviation	t- statistics	p-values	Conclusion
<b>Direct effect</b>					
H1 Innovative Technologies $\rightarrow$ Employability	0.203	0.034	6.127	0.000	Accepted
H2 Innovative Technologies $\rightarrow$ Entrepreneurship	0.541	0.035	15.29	0.000	Accepted
H3 Entrepreneurship $\rightarrow$ Employability	0.673	0.027	24.608	0.000	
<b>Indirect effect</b>					
Innovative Technologies $\rightarrow$ Entrepreneurship $\rightarrow$ Employability	0.364	0.028	13.07	0.000	Accepted
$R^2_{TEC \rightarrow PERF} = 0.087$ , $f^2_{TEC \rightarrow PERF} = 0.0879$					

Notes: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$



## 6. Discussion:

The study's findings have contributed to understanding the impact of innovative technologies on entrepreneurship and employability. These findings are supported by several significant observations.

Firstly, the study supports hypothesis H1, indicating that innovative technologies have a positive influence on employability. This conclusion is supported by the work of Autor and Acemoglu, who highlighted how technological advancements often lead to the creation of new job opportunities while rendering some traditional roles obsolete. Additionally, Brynjolfsson and the World Economic Forum noted that the integration of innovative technologies demands a diverse skill set, thereby stimulating the demand for specialized skills and fostering employability.

Secondly, the results support hypothesis H2, suggesting that innovative technologies positively affect entrepreneurship. This is supported by the work of Shane & Venkataraman, who emphasized how emerging technologies can create entrepreneurial opportunities by filling market gaps. Similarly, Audretsch and Keilbach highlighted the role of innovation in spawning new ventures, while Teece pointed out that entrepreneurs leveraging innovative technologies can gain a crucial competitive edge for entrepreneurial success.

Thirdly, the study confirms hypothesis H3, stating that entrepreneurship positively influences employability. This finding is supported by the notion that entrepreneurship plays a crucial role in developing skills such as creativity, resilience, and adaptability, all highly valued in the job market. Moreover, entrepreneurial experiences provide practical insights, industry knowledge, and networking opportunities that significantly enhance individuals' employability, contributing to innovation and organizational growth.

In conclusion, the study's results underscore the importance of innovative technologies in promoting entrepreneurship and employability, highlighting their significant impact on economic and social development.

## Conclusion:

The exploration into the interplay between innovative technologies, entrepreneurship, and employability has revealed profound insights into the contemporary landscape of business and employment. The findings of this research affirm the pivotal role of technological innovation in shaping entrepreneurial endeavors and enhancing individuals' readiness for the evolving job market.

Firstly, the study corroborates the hypothesis that innovative technologies have a positive influence on employability. This assertion aligns with existing literature, emphasizing how technological advancements create new job opportunities while necessitating the acquisition of adaptive skills to remain relevant in the workforce. The demand for specialized skills in data analysis, artificial intelligence, and automation underscores the transformative impact of technology on employability, urging individuals to continuously upskill to meet the demands of the digital economy.

Secondly, the research supports the notion that innovative technologies positively affect entrepreneurship. By filling market gaps, fostering innovation, and enabling entrepreneurs to gain a competitive edge, emerging technologies serve as catalysts for entrepreneurial ventures. This finding underscores the symbiotic relationship between technology and entrepreneurship, wherein the adoption of innovative tools and strategies propels entrepreneurial success and stimulates economic growth.

Thirdly, the study affirms that entrepreneurship plays a vital role in enhancing employability. Through the cultivation of essential skills such as creativity, resilience, and adaptability, entrepreneurial endeavors contribute to individuals' readiness for the job market. Moreover, the practical insights, industry knowledge, and networking opportunities gained through entrepreneurial experiences enrich individuals' employability, facilitating transitions between entrepreneurship and traditional employment while fostering organizational innovation and growth.

In essence, the research underscores the transformative potential of innovative technologies in driving entrepreneurial endeavors and shaping the future of workforce development. As businesses navigate an increasingly complex and digitalized economy, the ability to leverage advanced analytics and embrace entrepreneurial thinking becomes paramount for sustainable growth and competitive advantage. By shedding light on the intricate interplay between technology adoption, entrepreneurial success, and professional skills development, this study offers valuable insights for entrepreneurs, policymakers, educators, and stakeholders alike, paving the way for informed decision-making and meaningful interventions in the broader business ecosystem. As we continue to unravel the profound implications of technology on the entrepreneurial landscape and workforce dynamics, the imperative remains clear: to embrace innovation, cultivate entrepreneurial mindsets, and foster a culture of lifelong learning to thrive in the digital age.

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